

## CLAIMS

1. Ion mobility spectrometer characterized by comprising, as ionization element, a corona discharge source (200; 300) consisting of:
  - 5 - a first chamber (201; 308) provided with an inlet (210; 309) for a gas to be analyzed and with at least one first opening for communication (203; 311) between the internal space defined by said first chamber and the reaction zone of an IMS spectrometer;
  - a second chamber (204; 303), contained in said first chamber, provided with an inlet (209; 306) for an ultra-pure gas or a mixture of ultra-pure gases, and with at least one second communication opening (206; 310, 310') between said first and second chambers;
  - a pair of electrodes (207, 208; 304, 302'), at least one of which (207; 304) is needle-shaped, arranged in said second chamber;
- 10 15 said pair of electrodes and second opening being arranged in such geometrical relationship that there is no optical path between the zone of the corona discharge and the ion detector of the IMS instrument.
2. Ion mobility spectrometer according to claim 1, further comprising an electronic circuit allowing to keep a constant potential difference between said pair of electrodes.
- 20 3. Ion mobility spectrometer according to claim 1, further comprising an electronic circuit allowing to keep a constant current between said pair of electrodes.